3097

Release 1-19-79

Kay Electric

Model RI-123

This is only an interim manual. The complete instruction book is not yet available. The information contained in this manual is designed to provide basic information necessary for proper operation of the unit.

# SECTION I

# GENERAL INFORMATION

## 1.1 INTRODUCTION

The Model PI-123 sweep plug-in unit is compatable with Kay Electric sweeping oscillator basic rack units, such as the Marka-Sweep Model Pi and Vari-Sweep 860G. Oscillator output is any octave frequency (100-1000 mc), with the center frequency continously variable. Sweep width is adjustable from .2% to the full octave. All power and driving signals are provided by the basic rack unit.

## 1.2 INSTALLATION

As soon as the PI-123 is received, it should be visually inspected to determine that it was not dar aged during shipment. If any damage is noted, it should be reported immediately to the carrier, the Kay Electric Company, or its representative in your area.

To install this unit in the basic rack, slide it into the receiving well as far as possible; then turn the locking screw clockwise until it is tight.

## 1.3 SPECIFICATIONS

| | |
|---|---|
| Frequency Range: | 100-1000 mc (Any octave) |
| Output: | 0.5 volt rms 50Ω |
| Flatness: | ± 0.5 db over frequency range |
| Sweep Width: | 0.2% to full octave. |

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## SECTION II

## OPERATION

### 2.1 INTRODUCTION

General operating instructions are given in the manual provided with the basic rack unit compatable with PI-123 plug-in. Only functions influenced by the sweep head are discussed in this manual.

### 2.2 CONTROLS

| CONTROL | POSITION | FUNCTION |
|---|---|---|
| Center Freq. MC | Variable | Sets the PI-123 to any freq. within its range. |
| Sweep Width Nar-Wide | | Determines range of Sweep Width control. |
| Nar-Swee; Center | Variable | Adjusts the freq. of sweep oscillator when in NAR position. |
| Linearity Adj A, B, C, & D | Variable | Internal controls, used to adjust sweep linearity. |

### 2.3 GENERAL OPERATION

The P-867A sweep head should be installed in the rack unit and connected as shown in Fig. 2.1, or as described in the manual furnished with the basic rack. It is important that the detector has a flat response over the passband of the circuit under test.

1. Set the CENTER FREQ MC control to the center frequency of the device under test.

2. Set the SWEEP SELECTOR (on rack unit) for the desired mode of operation, MAN, LINE LOCK, or VAR SWP.

3. Set the SWEEP WIDTH control (on rack unit) for the desired sweep width (usually twice as wide as the bandpass of the device under test.

4. Adjust the RF LEVEL control and the Attenuator (both on rack unit) for a convenient output amplitude.

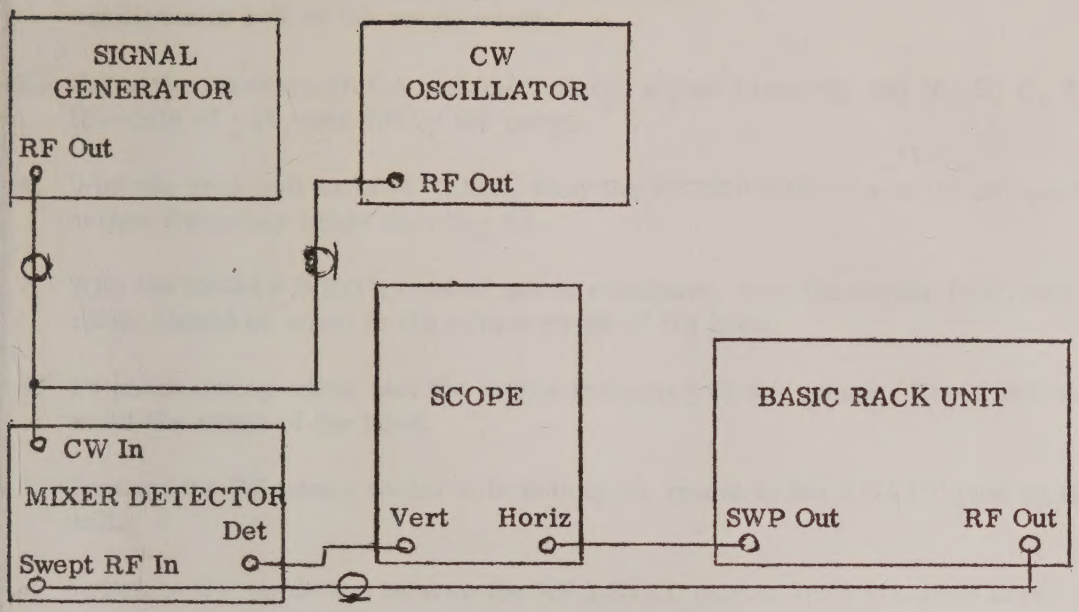



FIG. 3.1 - LINEARITY ADJUSTMENT

## SECTION III

## ALIGNMENT PROCEDURE

### 3.1 EQUIPMENT REQUIRED

A. Oscilloscope, DC to 300KC response.

B. Power Meter with Bolometer Mount. (Accurate to 1000MC)

C. CW Oscillator (10-1000MC)

D. Signal Generator (100-1000MC)

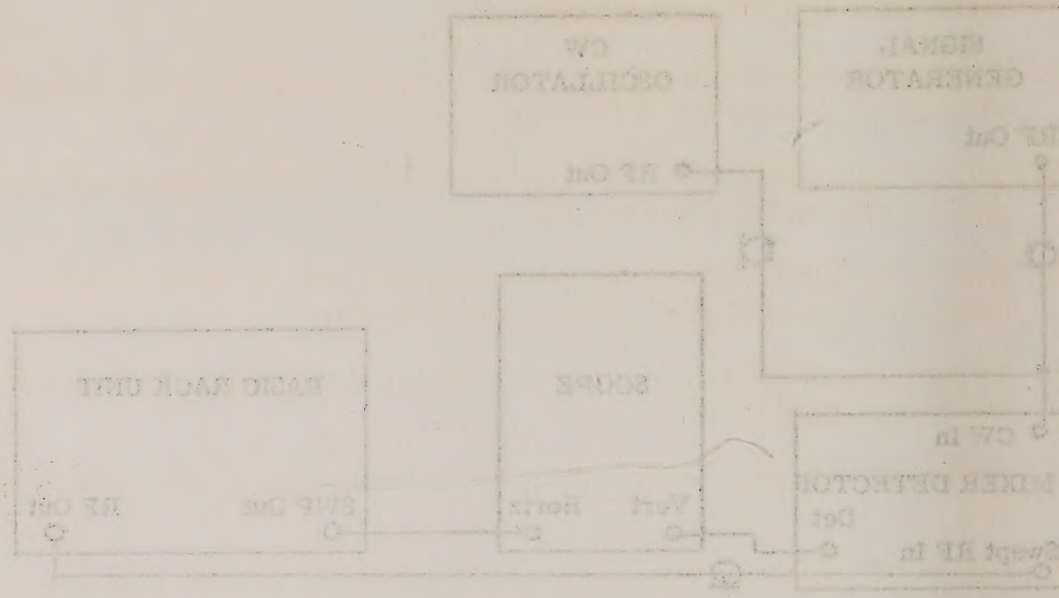
### 4.2 ALIGNMENT PROCEDURE

1. Set the SWEEP SELECTOR to CW and connect the RF power meter with the bolometer mount to the RF OUT jack on the rack unit.

2. Set the maximum RF output to slightly over 0.5 volt rms by adjusting R-39 in the basic rack unit.

3. Turn the RF LEVEL control (on rack unit) to minimum. The output should now be at least 3db below 0.5v rms.

4. Connect equipment as shown in Fig. 3.1. Set the center frequency to center of its range, the signal general to the same frequency, the sweep width to maximum, and the CW


CW
OSCILLATOR
RF Out
SCOPE
Vert
Horiz
RF OUT

oscillator to 10% of the sweep width.

5. Using the markers on the response curve, adjust Linearity Adj (A, B, C, & D) for a linearity of ± 10 over 80% of the scope.

6. With the rack unit in LINE LOCK, vary the SWEEP WIDTH control and see that the center frequency holds with in ± 5%.

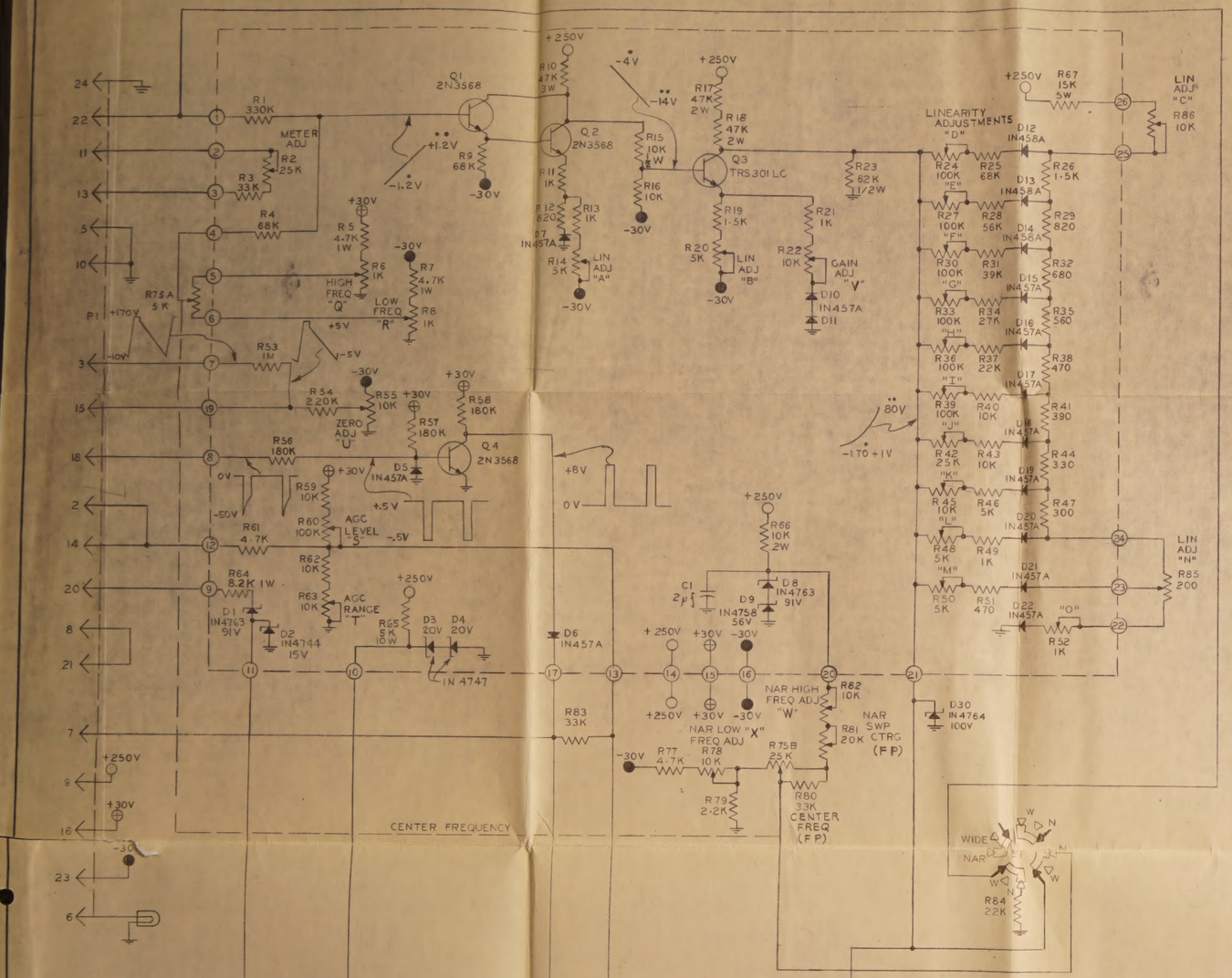
7. With the SWEEP WIDTH control set to minimum, vary the center frequency. The range should be equal to the octave range of the head.

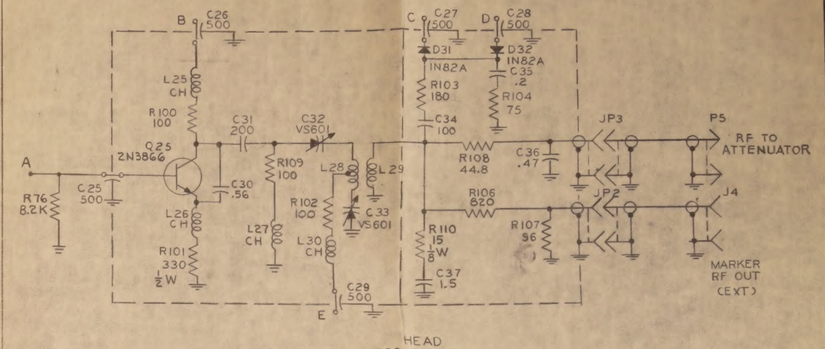
8. To check sweep width, set the center frequency to mid range. The width should be about the range of the head.

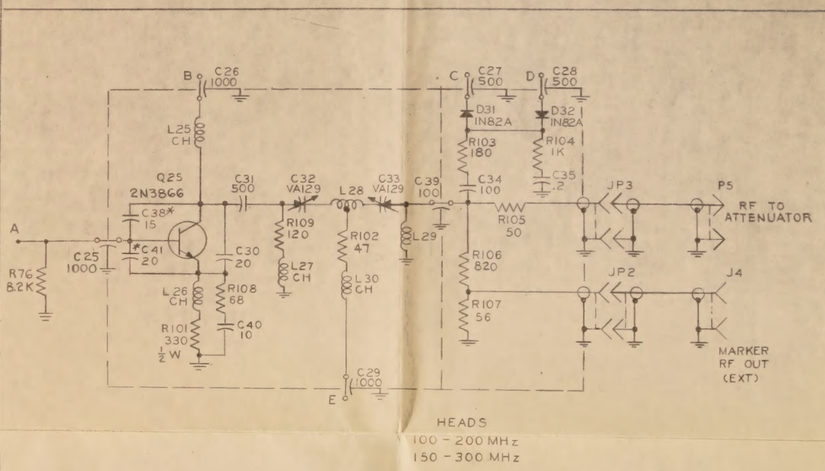
9. Connect the RF power meter with bolometer mount to the RF OUT jack on the rack unit.

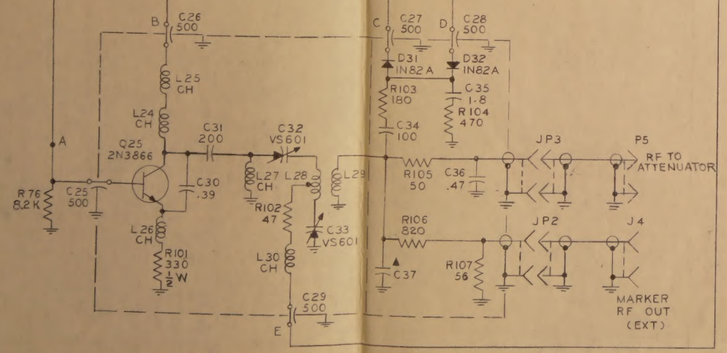
10. Switch to CW mode and turn up the RF LEVEL control unitl you read 5mw.

11. Vary the center frequency over its entire range and see that the output stays within ±0.5 db.



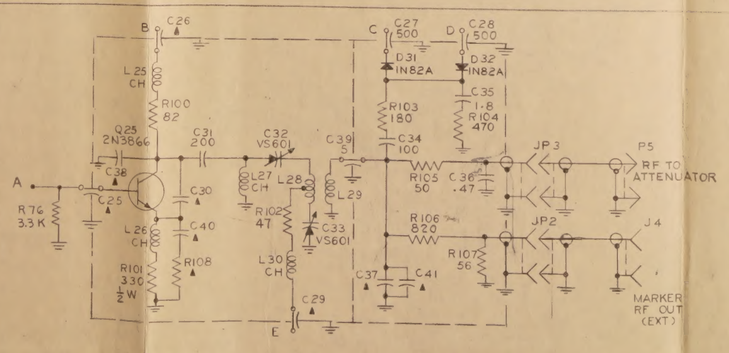




▲ SELECT COMPONENTS

| HEAD | C37 |
|---|---|
| 400-800 MHz | 3.9 |
| 450-900 MHz | 2 |



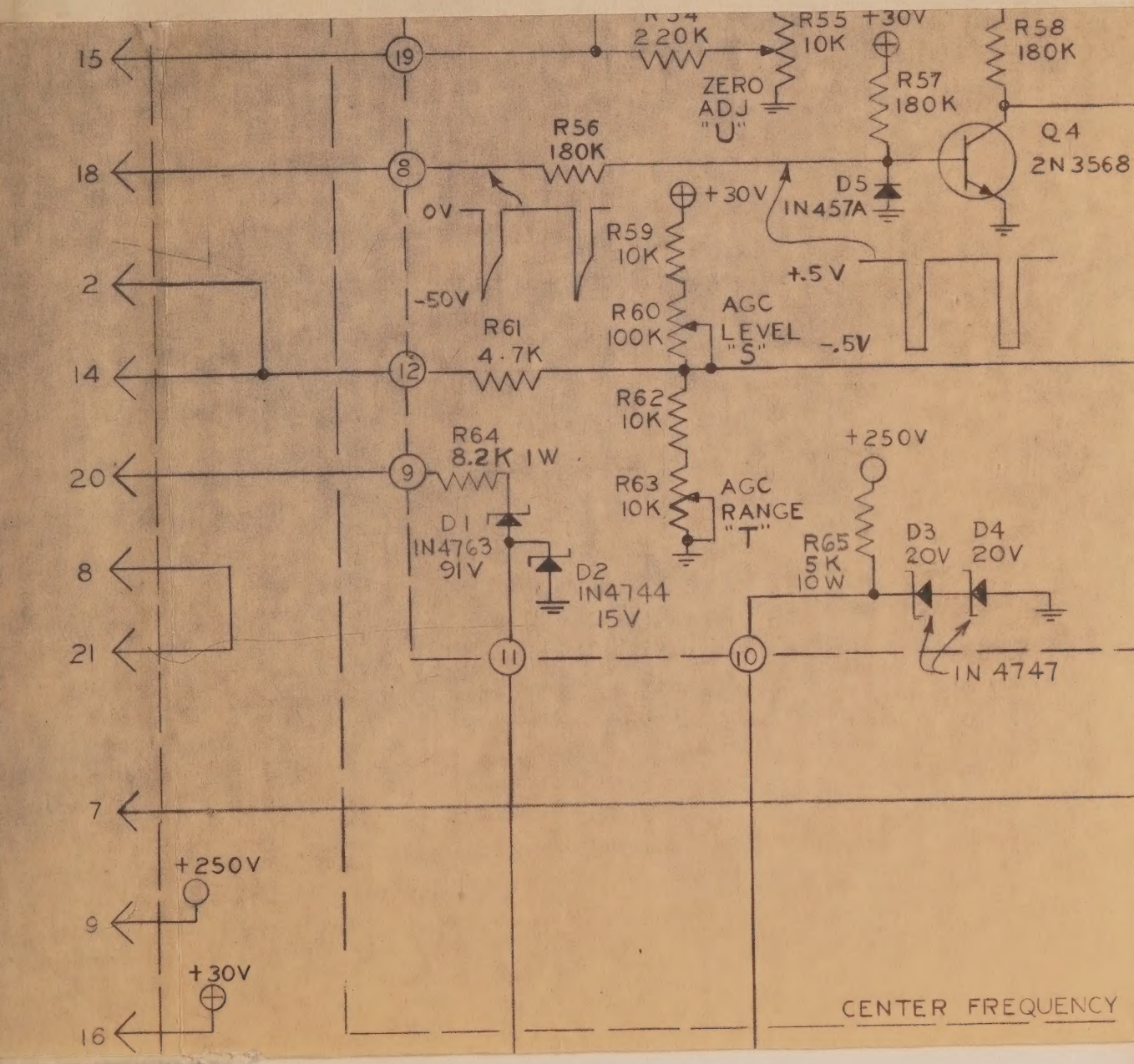

▲ SELECT COMPONENTS

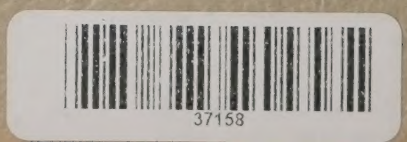
| HEAD | C25 | C26 | C29 | C30 | C37 | C38 | C40 | C41 | R108 |
|---|---|---|---|---|---|---|---|---|---|
| 200-400 MHz | 1000 | 1000 | 1000 | 1.8 | 6.8 | N.U. | 10 | 6.8 | 47 |
| 250-500 MHz | 500 | 500 | 500 | 1.1 | 3 | 1.5 | 6.8 | 3 | 47 |
| 300-600 MHz | 500 | 500 | 500 | .82 | 1.5 | 1.1 | 10 | 1.5 | 39 |

NOTE
UNLESS INDICATED OTHERWISE
ALL CAPACITANCES ARE IN μμf
ALL RESISTANCES ARE IN OHMS 1/4 W
* FACTORY SELECT
▲ SELECT COMPONENTS
• INDICATES APPROX VOLTAGE REFERRED TO LOWEST FREQ
•• INDICATES APPROX VOLTAGE REFERRED TO HIGHEST FREQ

PLUG IN UNITS
USE WITH
MARK A - SWEEP 1500
VARI - SWEEP 860

| | | |
|---|---|---|
| SCHEMATIC | PI 123 A | |
| MAT. | FINISH: | SCALE: |
| DIMENSION TOLERANCES UNLESS OTHERWISE SPECIFIED. DECIMAL DIMENSIONS ± .005 FRACTIONAL DIMENSIONS ± 1/64 | KAY ELECTRIC CO. PINE BROOK, N. J. | |
| CHANGE / DATE / APP. | DWN. BY AWP | DATE 3/18/67 |
| | APP. BY W Tomei | DATE 6-13-67 |
| | DWG. NO. D 9921 A | |


15
19
220K
R55
10K
+30V
R58
180K
ZERO
ADJ
"U"
R57
180K
18
8
R56
180K
Q4
2N3568
D5
IN457A
+30V
0V
R59
10K
+.5V
2
-50V
R60
100K
AGC
LEVEL
"S"
-.5V
R61
4.7K
14
12
R62
10K
+250V
R64
8.2K 1W
20
9
R63
10K
AGC
RANGE
"T"
D1
IN4763
91V
D3
20V
D4
20V
R65
5K
10W
8
D2
IN4744
15V
21
11
10
IN 4747
7
+250V
9
+30V
16
CENTER FREQUENCY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